PATENT ABSTRACTS OF JAPAN

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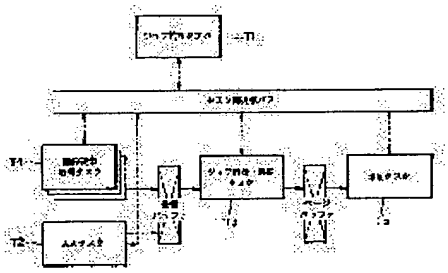
(54) IMAGE FORMING DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To efficiently acquire and print element data existent in a network.
SOLUTION: This image forming device is provided with an input task T2 for inputting the printing job of a page image composed of plural pieces of element data, a job analysis/expansion task T3 for recognizing whether the substance of element data consisting of the page image is contained in the printing job inputted by the input task T2 or not, a pixel acquisition task T4 for inputting the substance of element data in which it is recognized no substance is contained in the printing job, from an external server and job analysis/ expansion task T3 for expanding the page image to which the substance of all the element data is inputted.



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CLAIMS

[Claim(s)]
[Claim 1] A 1st input means to input the printing job of the page image which consists of two or more element data, A recognition means to recognize whether the stereo of the element data which constitute said page image is included in said printing job inputted by said 1st input means, A 2nd input means to input the stereo of the element data recognized that the stereo is not included in said printing job by said recognition means from an external device, Image formation equipment characterized by having an image expansion means to perform image expansion of said page image into which the stereo of all element data was inputted by said 2nd input means.
[Claim 2] Said 1st input means is image formation equipment according to claim 1 characterized by performing the request which has the deputy acquisition of the stereo of the element data carried out from said external device to the transmitting origin of said printing job.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the image formation equipment which processes in response to the printing job sent through a network from the terminal of a workstation etc.
[0002]
[Description of the Prior Art] By the printer connected to the network, it is made to carry out the printout of the image to a form etc. in response to the printing job sent through a network from the terminal of a workstation, a personal computer, etc.
[0003] In recent years, edit which arranges the element data created with the application of especially versatility, such as image creation and document preparation, in 1 page, and creates image data is performed briskly.
[0004] Furthermore, acquiring the element data arranged by the predetermined location in 1 page from other equipments through a network in connection with transfer of the data through a network becoming easy is also performed.
[0005]
[Problem(s) to be Solved by the Invention] However, when such image data is processed for delivery printing etc. to image formation equipment through a network, Since each element data arranged in 1 page is prepared and transmitted by the terminal side of a workstation, a personal computer, etc., while the processing burden of a terminal becomes large In order to transmit to image formation equipment once incorporating the element data, in acquiring element data from other equipments through a network, there is a problem of causing decline in processing effectiveness.
[0006] Moreover, in JP,8-20142,A, when download of a font object goes wrong, the technique of preventing interruption of printing processing by using other font objects with which a printer is equipped is indicated.
[0007] However, since an alternative is impossible like a font in acquiring element data from other equipments which exist in a network and considering as one image data, such a technique is inapplicable.
[0008] Moreover, in an environment like the Internet/extranet, although the user who entrusted image formation processing by setting out of security can refer to while acquisition of the element data which exist in a network takes time amount, for image formation equipment, the element data which cannot be referred to also have the problem that processing cannot be completed, by the image formation equipment independent from a certain thing.
[0009]
[Means for Solving the Problem] This invention is image formation equipment accomplished in order to solve such a technical problem. Namely, a 1st input means by which the image formation equipment of this invention inputs the printing job of the page image which consists of two or more element data, A recognition means to recognize whether the stereo of the element data which constitute a page image is included in the printing job inputted by the 1st input means, It has a 2nd input means to input the stereo of the element data recognized that the stereo is not included in a printing job by the recognition means from an external device, and an image

expansion means to perform image expansion of the page image into which the stereo of all element data was inputted by the 2nd input means.
[0010] In such this invention, a printing job is inputted with the 1st input means, and it recognizes whether the stereo of element data is included in this printing job by the recognition means. Moreover, when it has been recognized as the stereo not being included, the stereo is inputted from the external device with the 2nd input means. Thereby, it can process by acquiring a stereo by the image formation equipment side. That is, the burden which acquires and transmits a stereo will mitigate a transmitting agency that what is necessary is just to transmit the printing job in which the stereo of element data is not included.
[0011]
[Embodiment of the Invention] Below, the gestalt of the operation in the image formation equipment of this invention is explained based on drawing. Drawing 1 is drawing showing the configuration of one domain of the network where the image formation equipment in the 1st operation gestalt is applied. That is, the image formation equipment 1 of this operation gestalt is connected to LAN (Local Area Network), and image formation processing of printing etc. is performed to the job sent from user-terminal PCs, such as a personal computer similarly connected to LAN.
[0012] The file server FS which stores authentication server CS which manages the access privilege of the resource in a domain, and various kinds of files is connected to LAN. Internet N is accessed through Gateway G W, and this LAN is connected with other LANs through other Gateway G W. By this, user-terminal PC and image formation equipment 1 can acquire a file now from the file server FS connected to other LANs through Internet N.
[0013] Drawing 2 is drawing showing the hardware configuration of the image formation equipment in this operation gestalt. This image formation equipment 1 is equipped with CPU11 which controls each part, the hard disk 12 which memorizes a file, the memory 13 which secures a working area etc., the network interface 14 which output and input the data through LAN, and the printing section 15 which prints the acquired image to a form.
[0014] He is trying to process a job with the image formation equipment 1 of this operation gestalt, without applying a burden to user-terminal PC by the multitask operation in this CPU1. Drawing 3 is drawing showing the task configuration in the image formation equipment 1 of this operation gestalt.
[0015] That is, in CPU1, processing by the job management task T1, the input task T2, job analysis / expansion task T3, image element acquisition task T four, and the printing task T5 is performed, and I/O of data is performed through the communication bus between tasks between each task.
[0016] The input task T2 receives, the job sent from user-terminal PC etc. is accumulated in a receive buffer, and analysis / expansion processing is performed by job analysis / expansion task T3. This job consists of a job attribute which shows an implementer's etc. information, and print data.
[0017] There are element data with which the entity (stereo) is contained, and element data with which the reference to an entity is contained as print data. In the case of the reference, an entity exists in a file server FS (R> drawing 1 1 reference), and the reference is expressed as an object name of a directory service.
[0018] The print data expressed by the Page Description Language are analyzed, and it changes into the pseudo code which is the set of drawing information, it develops to the bit map which can further be printed, and job analysis / expansion task T3 is accumulated to a page buffer.
[0019] The printing task T5 carries out printing processing of the bit map accumulated in the page buffer with printer engine.
[0020] When the reference is contained as element data of print data, the acquisition request of the entity of element data is performed to image element acquisition task T four, and an entity is acquired from an external device through the Internet etc. Usually, one image element acquisition task T four is assigned to acquisition of one entity.
[0021] Although messages are exchanged between each task in order to control such each task, this message is notified to the task of a transmission place from a transmitting attaching task

through the bus between tasks. This bus device is realized by transmitter styles between tasks, such as a message queue.
[0022] In user-terminal PC, image data for such image formation equipment 1 to perform printing processing is created with various applications (a word processor, image creation software, etc.).

[0023] Drawing 4 is the mimetic diagram showing the example of a configuration of image data. In this example, each element data which consists of text data and image data is formed with various kinds of applications, and is suitably arranged in 1 page. Moreover, the part (a text, image) shown with the slash in drawing is element data with which the reference to an entity is contained in the job, and the part without a slash is element data with which the entity is contained in the job.
[0024] In forming such image data with various kinds of applications, he is trying to acquire the element data of the part shown with the slash in drawing from external equipment through the Internet etc. in user-terminal PC.
[0025] the case where there are element data with which such an entity does not exist with this operation gestalt -- user-terminal PC -- as it is -- it is made to process a job to image formation equipment 1 as image data by acquiring an entity from an external device with delivery and image formation equipment 1.
[0026] Next, processing of each task in this image formation equipment 1 is explained based on the flow chart of drawing 5 . First, an input task's detection of the job transmitted from the user terminal performs the initiation demand of job management task job processing (step S102). (step S101)
[0027] A job management task will create job management information, if this demand is received, and it notifies that initiation of expansion processing can be performed to job analysis / expansion task (step S103). Then, an input task receives a job (step S104), and accumulates the received job to a receive buffer.
[0028] Job analysis / expansion task interprets by reading the data which constitute a job through a receive buffer, after receiving the advice from a job management task (step S105). When the acquisition instruction of the reference to the element data which constitute image data is included in the instruction included in the read data (it is Yes at step S106), an acquisition request of image element data is required of an image element acquisition task (step S107).
[0029] If this demand is received, an image element acquisition task will acquire element data from an external device by the reference specified as advice of an acquisition request (step S108), and will pass that element data to job analysis / expansion task.
[0030] On the other hand, when job analysis / expansion task analyzes data and the entity is contained in the data, it is developed to a pseudo code. And expansion to a bitmapped image from the page to which all of the entity which constitutes a page, and a corresponding pseudo code were equal is performed (step S109).
[0031] The developed bitmapped image is accumulated to a page buffer. After the expansion processing to a bitmapped image is completed, the printing request of a page is notified to a printing task. Although the creation of the bitmapped image of a page (N+1) eye may be first completed rather than eye N page at this time, it waits for creation termination of the bitmapped image of eye N page, and the printing request of a page (N+1) eye is performed.
[0032] A printing task performs [a printing request] ejection and printing processing for a bitmapped image from a page buffer after a carrier beam.
[0033] By this, from a user terminal, the entity can be acquired for the job in which the entity of element data does not exist with delivery and image formation equipment to image formation equipment, and printing processing can be performed now.
[0034] In addition, when accounting is required element data, you may make it print the accounting information as a header at the time of the class information which shows the class of elements, such as a reference source like the directory name of element data, a text or an image, and a graphics format, or reference, in case printing processing is performed.
[0035] Next, the 2nd operation gestalt of this invention is explained. The image formation

equipment in the 2nd operation gestalt enables it to perform printing processing, when acquiring the entity of element data from an external device based on the same reference as the 1st operation gestalt, also when it does not have the refer right by the image formation equipment side.

[0036] Drawing 6 is an important section block diagram explaining the 2nd operation gestalt. That is, the word processor task T6 which draws up a document etc., the printing management task T7 which performs management of printing, and the security manager M who performs the data acquisition demand using a refer right are formed in the user-terminal PC side. Moreover, image formation equipment 1 requests acquisition of an image by image element acquisition task T four.

[0037] Here, the target image is stored in Server S through LAN, and let the case where only user-terminal PC has the refer right be an example. Image formation equipment 1 tends to acquire the entity of element data to Server S based on this reference, when the reference of element data is contained in the carrier beam job from user-terminal PC, but since that refer right is not in image formation equipment 1, it is unacquirable.

[0038] So, with this operation gestalt, the vicarious execution processing authority of the user by image formation equipment 1 is beforehand registered into the security manager M of user-terminal PC. Image element acquisition task T four of image formation equipment 1 transmits the advice of a deputy acquisition request for requesting acquisition of the element data which failed in reference from the security manager M of user-terminal PC which is the dispatch origin of a job (1).

[0039] The security manager M refers to the element data which exist in Server S in response to this advice of a deputy acquisition request (refer to (1) in drawing). Under the present circumstances, reference actuation is performed, using a refer right as a user who is using user-terminal PC.

[0040] When user-terminal PC refers element data, authentication server CS (refer to drawing 1) inspects the refer right. When a refer right exists to user-terminal PC which is the transmitting origin of a job, user-terminal PC acquires the target element data from Server S (refer to (2) in drawing), and this is transmitted to image element acquisition task T four of image formation equipment 1 (refer to (3) in drawing).

[0041] On the other hand, when there is no refer right of element data in user-terminal PC, while notifying the purport to which authentication server CS is not made as for acquisition of element data to user-terminal PC, an error is transmitted to image element acquisition task T four of image formation equipment 1 from user-terminal PC.

[0042] It becomes possible to prepare all element data by acquiring element data through user-terminal PC with a refer right, even if it is element data no refer right is [data] in image formation equipment 1, and to perform printing processing by such processing.

[0043]

[Effect of the Invention] As explained above, according to the image formation equipment of this invention, there is the following effectiveness. That is, the transmitting origin of a printing job does not need to transmit the stereo of element data, and since it acquires the stereo of the element data which exist in a network by the image formation equipment side, it can mitigate substantially the burden placed on the transmitting side of a job. Moreover, since image formation equipment acquires the stereo of element data, it becomes possible to raise the effectiveness at the time of preparing and processing the element data which exist in a network.

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the image formation equipment which processes in response to the printing job sent through a network from the terminal of a workstation etc.

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PRIOR ART

[Description of the Prior Art] By the printer connected to the network, it is made to carry out the printout of the image to a form etc. in response to the printing job sent through a network from the terminal of a workstation, a personal computer, etc.
[0003] In recent years, edit which arranges the element data created with the application of especially versatility, such as image creation and document preparation, in 1 page, and creates image data is performed briskly.
[0004] Furthermore, acquiring the element data arranged by the predetermined location in 1 page from other equipments through a network in connection with transfer of the data through a network becoming easy is also performed.

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, when such image data is processed for delivery printing etc. to image formation equipment through a network, Since each element data arranged in 1 page is prepared and transmitted by the terminal side of a workstation, a personal computer, etc., while the processing burden of a terminal becomes large In order to transmit to image formation equipment once incorporating the element data, in acquiring element data from other equipments through a network, there is a problem of causing decline in processing effectiveness.
[0006] Moreover, in JP,8-20142,A, when download of a font object goes wrong, the technique of preventing interruption of printing processing by using other font objects with which a printer is equipped is indicated.
[0007] However, since an alternative is impossible like a font in acquiring element data from other equipments which exist in a network and considering as one image data, such a technique is inapplicable.
[0008] Moreover, in an environment like the Internet/extranet, although the user who entrusted image formation processing by setting out of security can refer to while acquisition of the element data which exist in a network takes time amount, for image formation equipment, the element data which cannot be referred to also have the problem that processing cannot be completed, by the image formation equipment independent from a certain thing.

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MEANS

[Means for Solving the Problem] This invention is image formation equipment accomplished in order to solve such a technical problem. Namely, a 1st input means by which the image formation equipment of this invention inputs the printing job of the page image which consists of two or more element data, A recognition means to recognize whether the stereo of the element data which constitute a page image is included in the printing job inputted by the 1st input means, It has a 2nd input means to input the stereo of the element data recognized that the stereo is not included in a printing job by the recognition means from an external device, and an image expansion means to perform image expansion of the page image into which the stereo of all element data was inputted by the 2nd input means.
[0010] In such this invention, a printing job is inputted with the 1st input means, and it recognizes whether the stereo of element data is included in this printing job by the recognition means. Moreover, when it has been recognized as the stereo not being included, the stereo is inputted from the external device with the 2nd input means. Thereby, it can process by acquiring a stereo by the image formation equipment side. That is, the burden which acquires and transmits a stereo will mitigate a transmitting agency that what is necessary is just to transmit the printing job in which the stereo of element data is not included.
[0011]
[Embodiment of the Invention] Below, the gestalt of the operation in the image formation equipment of this invention is explained based on drawing. Drawing 1 is drawing showing the configuration of one domain of the network where the image formation equipment in the 1st operation gestalt is applied. That is, the image formation equipment 1 of this operation gestalt is connected to LAN (Local Area Network), and image formation processing of printing etc. is performed to the job sent from user-terminal PCs, such as a personal computer similarly connected to LAN.
[0012] The file server FS which stores authentication server CS which manages the access privilege of the resource in a domain, and various kinds of files is connected to LAN. Internet N is accessed through Gateway G W, and this LAN is connected with other LANs through other Gateway G W. By this, user-terminal PC and image formation equipment 1 can acquire a file now from the file server FS connected to other LANs through Internet N.
[0013] Drawing 2 is drawing showing the hardware configuration of the image formation equipment in this operation gestalt. This image formation equipment 1 is equipped with CPU11 which controls each part, the hard disk 12 which memorizes a file, the memory 13 which secures a working area etc., the network interface 14 which output and input the data through LAN, and the printing section 15 which prints the acquired image to a form.
[0014] He is trying to process a job with the image formation equipment 1 of this operation gestalt, without applying a burden to user-terminal PC by the multitask operation in this CPU1. Drawing 3 is drawing showing the task configuration in the image formation equipment 1 of this operation gestalt.
[0015] That is, in CPU1, processing by the job management task T1, the input task T2, job analysis / expansion task T3, image element acquisition task T four, and the printing task T5 is performed, and I/O of data is performed through the communication bus between tasks between

each task.
[0016] The input task T2 receives, the job sent from user-terminal PC etc. is accumulated in a receive buffer, and analysis / expansion processing is performed by job analysis / expansion task T3. This job consists of a job attribute which shows an implementer's etc. information, and print data.
[0017] There are element data with which the entity (stereo) is contained, and element data with which the reference to an entity is contained as print data. In the case of the reference, an entity exists in a file server FS (R> drawing 1 1 reference), and the reference is expressed as an object name of a directory service.
[0018] The print data expressed by the Page Description Language are analyzed, and it changes into the pseudo code which is the set of drawing information, it develops to the bit map which can further be printed, and job analysis / expansion task T3 is accumulated to a page buffer.
[0019] The printing task T5 carries out printing processing of the bit map accumulated in the page buffer with printer engine.
[0020] When the reference is contained as element data of print data, the acquisition request of the entity of element data is performed to image element acquisition task T four, and an entity is acquired from an external device through the Internet etc. Usually, one image element acquisition task T four is assigned to acquisition of one entity.
[0021] Although messages are exchanged between each task in order to control such each task, this message is notified to the task of a transmission place from a transmitting attaching task through the bus between tasks. This bus device is realized by transmitter styles between tasks, such as a message queue.
[0022] In user-terminal PC, image data for such image formation equipment 1 to perform printing processing is created with various applications (a word processor, image creation software, etc.).

[0023] Drawing 4 is the mimetic diagram showing the example of a configuration of image data. In this example, each element data which consists of text data and image data is formed with various kinds of applications, and is suitably arranged in 1 page. Moreover, the part (a text, image) shown with the slash in drawing is element data with which the reference to an entity is contained in the job, and the part without a slash is element data with which the entity is contained in the job.
[0024] In forming such image data with various kinds of applications, he is trying to acquire the element data of the part shown with the slash in drawing from external equipment through the Internet etc. in user-terminal PC.
[0025] the case where there are element data with which such an entity does not exist with this operation gestalt — user-terminal PC — as it is — it is made to process a job to image formation equipment 1 as image data by acquiring an entity from an external device with delivery and image formation equipment 1.
[0026] Next, processing of each task in this image formation equipment 1 is explained based on the flow chart of drawing 5 . First, an input task's detection of the job transmitted from the user terminal performs the initiation demand of job management task job processing (step S102). (step S101)
[0027] A job management task will create job management information, if this demand is received, and it notifies that initiation of expansion processing can be performed to job analysis / expansion task (step S103). Then, an input task receives a job (step S104), and accumulates the received job to a receive buffer.
[0028] Job analysis / expansion task interprets by reading the data which constitute a job through a receive buffer, after receiving the advice from a job management task (step S105). When the acquisition instruction of the reference to the element data which constitute image data is included in the instruction included in the read data (it is Yes at step S106), an acquisition request of image element data is required of an image element acquisition task (step S107).
[0029] If this demand is received, an image element acquisition task will acquire element data from an external device by the reference specified as advice of an acquisition request (step

S108), and will pass that element data to job analysis / expansion task.
[0030] On the other hand, when job analysis / expansion task analyzes data and the entity is contained in the data, it is developed to a pseudo code. And expansion to a bitmapped image from the page to which all of the entity which constitutes a page, and a corresponding pseudo code were equal is performed (step S109).
[0031] The developed bitmapped image is accumulated to a page buffer. After the expansion processing to a bitmapped image is completed, the printing request of a page is notified to a printing task. Although the creation of the bitmapped image of a page (N+1) eye may be first completed rather than eye N page at this time, it waits for creation termination of the bitmapped image of eye N page, and the printing request of a page (N+1) eye is performed.
[0032] A printing task performs [a printing request] ejection and printing processing for a bitmapped image from a page buffer after a carrier beam.
[0033] By this, from a user terminal, the entity can be acquired for the job in which the entity of element data does not exist with delivery and image formation equipment to image formation equipment, and printing processing can be performed now.
[0034] In addition, when accounting is required element data, you may make it print the accounting information as a header at the time of the class information which shows the class of elements, such as a reference source like the directory name of element data, a text or an image, and a graphics format, or reference, in case printing processing is performed.
[0035] Next, the 2nd operation gestalt of this invention is explained. The image formation equipment in the 2nd operation gestalt enables it to perform printing processing, when acquiring the entity of element data from an external device based on the same reference as the 1st operation gestalt, also when it does not have the refer right by the image formation equipment side.
[0036] Drawing 6 is an important section block diagram explaining the 2nd operation gestalt. That is, the word processor task T6 which draws up a document etc., the printing management task T7 which performs management of printing, and the security manager M who performs the data acquisition demand using a refer right are formed in the user-terminal PC side. Moreover, image formation equipment 1 requests acquisition of an image by image element acquisition task T four.

[0037] Here, the target image is stored in Server S through LAN, and let the case where only user-terminal PC has the refer right be an example. Image formation equipment 1 tends to acquire the entity of element data to Server S based on this reference, when the reference of element data is contained in the carrier beam job from user-terminal PC, but since that refer right is not in image formation equipment 1, it is unacquirable.
[0038] So, with this operation gestalt, the vicarious execution processing authority of the user by image formation equipment 1 is beforehand registered into the security manager M of user-terminal PC. Image element acquisition task T four of image formation equipment 1 transmits the advice of a deputy acquisition request for requesting acquisition of the element data which failed in reference from the security manager M of user-terminal PC which is the dispatch origin of a job (1).
[0039] The security manager M refers to the element data which exist in Server S in response to this advice of a deputy acquisition request (refer to (1) in drawing). Under the present circumstances, reference actuation is performed, using a refer right as a user who is using user-terminal PC.
[0040] When user-terminal PC refers element data, authentication server CS (refer to drawing 1) inspects the refer right. When a refer right exists to user-terminal PC which is the transmitting origin of a job, user-terminal PC acquires the target element data from Server S (refer to (2) in drawing), and this is transmitted to image element acquisition task T four of image formation equipment 1 (refer to (3) in drawing).
[0041] On the other hand, when there is no refer right of element data in user-terminal PC, while notifying the purport to which authentication server CS is not made as for acquisition of element data to user-terminal PC, an error is transmitted to image element acquisition task T four of image formation equipment 1 from user-terminal PC.

[0042] It becomes possible to prepare all element data by acquiring element data through user-terminal PC with a refer right, even if it is element data no refer right is [data] in image formation equipment 1, and to perform printing processing by such processing.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram of the network where the image formation equipment in the 1st operation gestalt is applied.
[Drawing 2] It is drawing showing the hardware configuration of image formation equipment.
[Drawing 3] It is drawing showing the task configuration in image formation equipment.
[Drawing 4] It is the mimetic diagram showing the example of a configuration of image data.
[Drawing 5] It is a flow chart explaining tasking.
[Drawing 6] It is an important section block diagram explaining the 2nd operation gestalt.
[Description of Notations]
1 [— Memory, 14 / — A network interface, 15 / — Printing section] — Image formation equipment, 11 — CPU, 12 — A hard disk, 13

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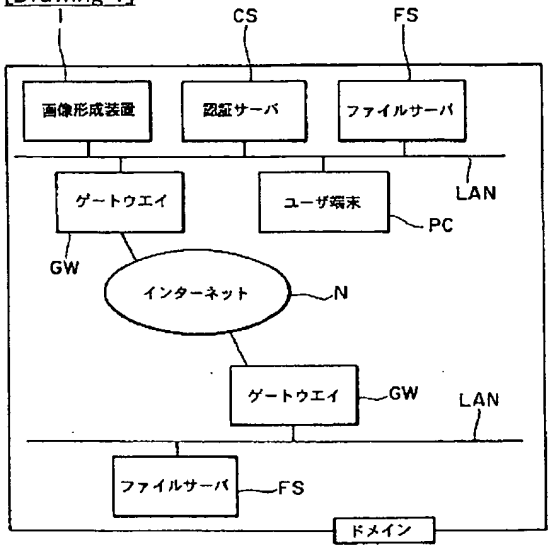
DRAWINGS

[Drawing 1]



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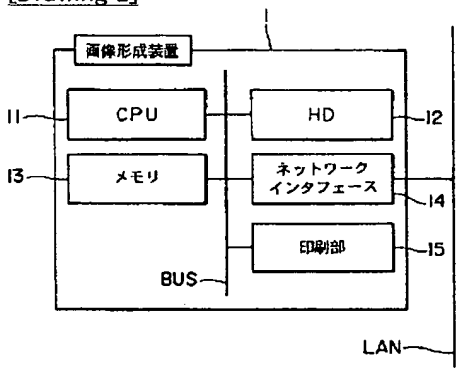

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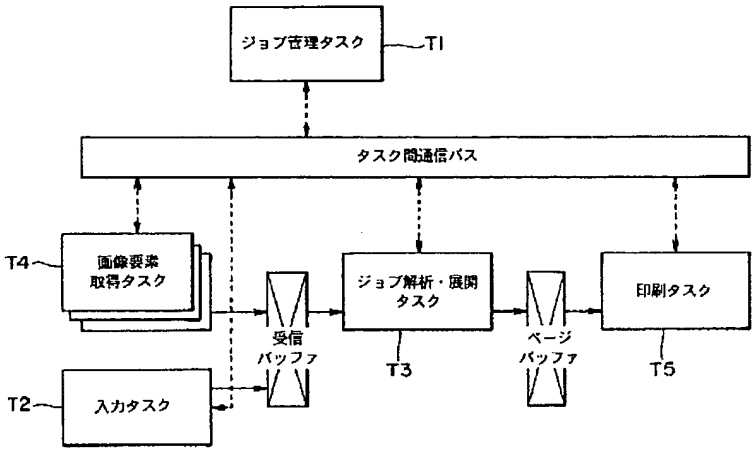

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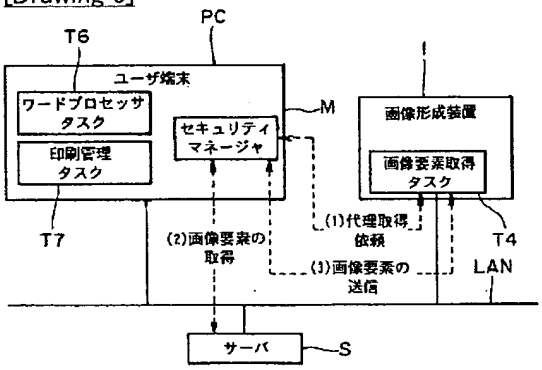

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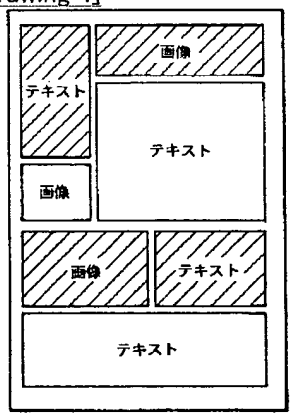

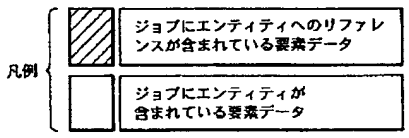

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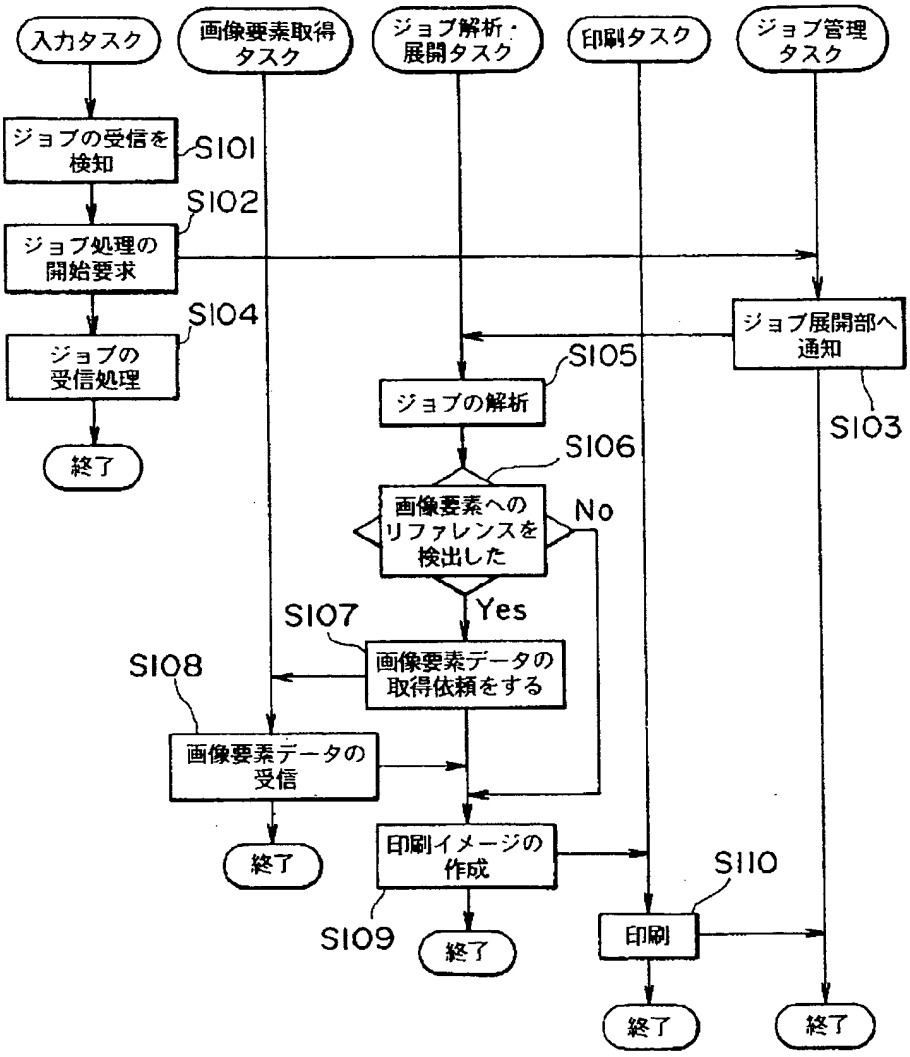

[Translation done.]

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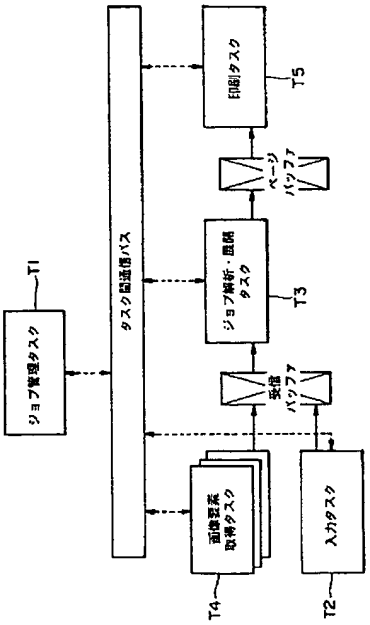
(54)【発明の名称】　画像形成装置

(57)【要約】

【課題】　ネットワーク内に存在する要素データを効率よく取得して印刷を行うこと。

【解決手段】　本発明の画像形成装置は、複数の要素データから構成されるページ画像の印字ジョブを入力する入力タスクＴ２と、入力タスクＴ２により入力された印字ジョブにページ画像を構成する要素データの実体が含まれているか否かを認識するジョブ解析・展開タスクＴ３と、印字ジョブに実体が含まれていないと認識された要素データの実体を外部のサーバから入力する画像要素取得タスクＴ４と、全ての要素データの実体が入力されたページ画像の画像展開を行うジョブ解析・展開タスクＴ３とを備えている。



1

【特許請求の範囲】

【請求項１】　複数の要素データから構成されるページ画像の印字ジョブを入力する第１入力手段と、

前記第１入力手段により入力された前記印字ジョブに前記ページ画像を構成する要素データの実体が含まれているか否かを認識する認識手段と、

前記認識手段により前記印字ジョブに実体が含まれていないと認識された要素データの実体を外部装置から入力する第２入力手段と、

前記第２入力手段により全ての要素データの実体が入力された前記ページ画像の画像展開を行う画像展開手段とを備えていることを特徴とする画像形成装置。

【請求項２】　前記第１入力手段は、前記印字ジョブの送信元に対してその要素データの実体を前記外部装置から代理取得してもらう依頼を行うことを特徴とする請求項１記載の画像形成装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、ワークステーション等の端末からネットワークを介して送られる印字ジョブを受けて処理を行う画像形成装置に関する。

【０００２】

【従来の技術】ネットワークに接続されたプリンタでは、ワークステーションやパーソナルコンピュータ等の端末からネットワークを介して送られる印字ジョブを受けて画像を用紙等に印刷出力するようにしている。

【０００３】特に近年では、画像作成や文書作成等の種々のアプリケーションによって作成した要素データを１ページ内にレイアウトして画像データを作成する編集が盛んに行われている。

【０００４】さらに、ネットワークを介したデータの授受が容易になってきたことに伴い、１ページ内の所定位置にレイアウトされる要素データをネットワークを介して他の装置から取得することも行われている。

【０００５】

【発明が解決しようとする課題】しかしながら、このような画像データをネットワークを介して画像形成装置に送り印刷等の処理を行う場合、１ページ内にレイアウトされている各要素データをワークステーションやパーソナルコンピュータ等の端末側で用意して伝送することから、端末の処理負担が大きくなるとともに、ネットワークを介して他の装置から要素データを取得する場合には一旦その要素データを取り込んだ後に画像形成装置へ伝送するため処理効率の低下を招くという問題がある。

【０００６】また、特開平８－２０１４２号公報では、フォントオブジェクトのダウンロードに失敗した場合に、プリンタが備える他のフォントオブジェクトを使用することで印刷処理の中断を防止する技術が開示されている。

【０００７】しかし、ネットワーク内に存在する他の装置から要素データを取得して１つの画像データとする場合にはフォントのように代替ができないため、このような技術を適用することはできない。

【０００８】また、インターネット／エクストラネットのような環境においては、ネットワーク内に存在する要素データの取得に時間がかかるとともに、セキュリティの設定によって画像形成処理を委託したユーザは参照可能であるが、画像形成装置にとっては参照不可能な要素データもあることから、画像形成装置単独では処理を完了できないという問題がある。

【０００９】

【課題を解決するための手段】本発明はこのような課題を解決するために成された画像形成装置である。すなわち、本発明の画像形成装置は、複数の要素データから構成されるページ画像の印字ジョブを入力する第１入力手段と、第１入力手段により入力された印字ジョブにページ画像を構成する要素データの実体が含まれているか否かを認識する認識手段と、認識手段により印字ジョブに実体が含まれていないと認識された要素データの実体を外部装置から入力する第２入力手段と、第２入力手段により全ての要素データの実体が入力されたページ画像の画像展開を行う画像展開手段とを備えている。

【００１０】このような本発明では、第１入力手段で印字ジョブを入力し、認識手段によりこの印字ジョブに要素データの実体が含まれているか否かを認識する。また、実体が含まれていないと認識した場合には第２入力手段によってその実体を外部装置から入力している。これにより、画像形成装置側で実体を取得して処理を行うことができる。つまり、送信元は要素データの実体が含まれていない印字ジョブを送信すればよく、実体を取得して伝送する負担が軽減することになる。

【００１１】

【発明の実施の形態】以下に、本発明の画像形成装置における実施の形態を図に基づいて説明する。図１は第１実施形態における画像形成装置が適用されるネットワークのひとつのドメインの構成を示す図である。すなわち、本実施形態の画像形成装置１はＬＡＮ（Local Area Network）に接続されており、同じくＬＡＮに接続されたパーソナルコンピュータ等のユーザ端末ＰＣから送られるジョブに対して印刷等の画像形成処理を行う。

【００１２】ＬＡＮにはドメイン内のリソースのアクセス権を管理する認証サーバＣＳと各種のファイルを格納するファイルサーバＦＳとが接続されている。このＬＡＮはゲートウェイＧＷを介してインターネットＮに接続され、他のゲートウェイＧＷを介して他のＬＡＮと接続されている。これによって、他のＬＡＮに接続されたファイルサーバＦＳからインターネットＮを介してユーザ端末ＰＣや画像形成装置１がファイルを取得することができるようになっている。

【００１３】図２は本実施形態における画像形成装置の

2

特開平１１－１２６１４１

ハードウェア構成を示す図である。この画像形成装置１は、各部を制御するＣＰＵ１１と、ファイルを記憶するハードディスク１２と、作業領域等を確保するメモリ１３と、ＬＡＮを介したデータの入出力を行うネットワークインタフェース１４と、取得した画像を用紙へ印刷する印刷部１５とを備えている。

【００１４】本実施形態の画像形成装置１では、このＣＰＵ１におけるマルチタスク処理でユーザ端末ＰＣに負担をかけることなくジョブを処理するようにしている。図３は本実施形態の画像形成装置１におけるタスク構成を示す図である。

【００１５】すなわち、ＣＰＵ１では、ジョブ管理タスクＴ１、入力タスクＴ２、ジョブ解析・展開タスクＴ３、画像要素取得タスクＴ４、印刷タスクＴ５による処理が行われ、各タスク間ではタスク間通信バスを介してデータの入出力が行われている。

【００１６】ユーザ端末ＰＣ等から送られるジョブは入力タスクＴ２が受信して受信バッファに蓄積され、ジョブ解析・展開タスクＴ３によって解析・展開処理が行われる。このジョブは、作成者等の情報を示すジョブ属性と、プリントデータとから構成されている。

【００１７】プリントデータには、エンティティ（実体）が含まれている要素データと、エンティティへのリファレンスが含まれている要素データとがある。リファレンスの場合、エンティティはファイルサーバＦＳ（図１参照）に存在し、リファレンスはディレクトリサービスのオブジェクト名として表現されている。

【００１８】ジョブ解析・展開タスクＴ３は、ページ記述言語で表現されたプリントデータを解析し、描画情報の集合である中間コードへと変換し、更に印刷可能なビットマップへと展開してページバッファへ蓄積する。

【００１９】印刷タスクＴ５はページバッファに蓄積されたビットマップをプリンタエンジンによって印刷処理する。

【００２０】プリントデータの要素データとしてリファレンスが含まれている場合には、画像要素取得タスクＴ４に、要素データのエンティティの取得依頼を行い、インターネット等を介して外部装置からエンティティの取得を行う。通常、１個のエンティティの取得に対して１個の画像要素取得タスクＴ４を割り当てる。

【００２１】このような各タスクの制御を行うために各タスク間でメッセージの交換を行うが、このメッセージはタスク間バスを介して送信元のタスクから送信先のタスクへと通知される。このバス機構はメッセージキュー等のタスク間通信機構によって実現されている。

【００２２】ユーザ端末ＰＣでは、このような画像形成装置１で印刷処理を行うための画像データを種々のアプリケーション（ワードプロセッサや画像作成ソフトウェア等）によって作成している。

【００２３】図４は画像データの構成例を示す模式図である。この例では、テキストデータと画像データとから成る各要素データが各種のアプリケーションで形成され１ページ内に適宜レイアウトされている。また、図中斜線で示す部分（テキスト、画像）はジョブにエンティティへのリファレンスが含まれている要素データであり、斜線のない部分はジョブにエンティティが含まれている要素データである。

【００２４】ユーザ端末ＰＣでは、各種のアプリケーションによってこのような画像データを形成するにあたり、図中斜線で示す部分の要素データを外部の装置から例えばインターネット等を介して取得するようにしている。

【００２５】本実施形態では、このようなエンティティの存在しない要素データがある場合でも、ユーザ端末ＰＣはそのまま画像データとして画像形成装置１へジョブを送り、画像形成装置１でエンティティを外部装置から取得して処理を行うようにしている。

【００２６】次に、この画像形成装置１における各タスクの処理を図５のフローチャートに基づいて説明する。先ず、入力タスクがユーザ端末から送信されたジョブを検知すると（ステップＳ１０１）、ジョブ管理タスクジョブ処理の開始要求を行う（ステップＳ１０２）。

【００２７】ジョブ管理タスクはこの要求を受信するとジョブ管理情報を作成し、ジョブ解析・展開タスクへ展開処理の開始が実行できることを通知する（ステップＳ１０３）。その後、入力タスクはジョブの受信を行い（ステップＳ１０４）、受信したジョブを受信バッファへと蓄積する。

【００２８】ジョブ解析・展開タスクはジョブ管理タスクからの通知を受信した後、受信バッファを介してジョブを構成するデータを読み込み解釈を行う（ステップＳ１０５）。読み込んだデータに含まれる命令の中に画像データを構成する要素データへのリファレンスの取得命令が含まれている場合（ステップＳ１０６でＹｅｓ）、画像要素データの取得依頼を画像要素取得タスクへと要求する（ステップＳ１０７）。

【００２９】画像要素取得タスクはこの要求を受信すると取得依頼通知に指定されたリファレンスにより要素データを外部装置から取得し（ステップＳ１０８）、その要素データをジョブ解析・展開タスクへ渡す。

【００３０】一方、ジョブ解析・展開タスクがデータの解析をしてそのデータの中にエンティティが含まれている場合にはそれを中間コードまで展開する。そして、ページを構成するエンティティおよび対応する中間コードが全て揃ったページからビットマップイメージへの展開を行う（ステップＳ１０９）。

【００３１】展開されたビットマップイメージはページバッファへ蓄積される。ビットマップイメージへの展開処理が終了した後は、印刷タスクへページの印刷依頼を通知する。このとき、Ｎページ目よりも（Ｎ＋１）ペー

ジ目のビットマップイメージの作成の方が先に終了する場合もあるが、Ｎページ目のビットマップイメージの作成終了を待って（Ｎ＋１）ページ目の印刷依頼を行う。

【００３２】印刷タスクは印刷依頼を受けた後、ページバッファからビットマップイメージを取り出し、印刷処理を実行する。

【００３３】これによって、ユーザ端末からは要素データのエンティティが存在しないジョブを画像形成装置へ送り、画像形成装置でそのエンティティを取得して印刷処理を行うことができるようになる。

【００３４】なお、印刷処理を行う際、要素データのディレクトリ名のようなリファレンス情報、テキストまたは画像、画像フォーマットなどの要素の種類を示す種類情報、あるいは参照時に課金が必要な要素データの場合にはその課金情報を見出しとして印字するようにしてもよい。

【００３５】次に、本発明の第２実施形態を説明する。第２実施形態における画像形成装置は、第１実施形態と同様なリファレンスに基づいて要素データのエンティティを外部装置から取得する場合、画像形成装置側でその参照権を持たないときにも印刷処理を実行できるようにするものである。

【００３６】図６は第２実施形態を説明する要部構成図である。すなわち、ユーザ端末ＰＣ側には文書等の作成を行うワードプロセッサタスクＴ６と、印刷の管理を行う印刷管理タスクＴ７と、参照権を用いたデータ取得要求を行うセキュリティマネージャＭとが設けられている。また、画像形成装置１は画像要素取得タスクＴ４によって画像の取得を依頼するようになっている。

【００３７】ここでは、ＬＡＮを介してサーバＳに目的の画像が格納されており、その参照権をユーザ端末ＰＣのみが持っている場合を例とする。画像形成装置１は、ユーザ端末ＰＣから受けたジョブの中に要素データのリファレンスが含まれている場合、このリファレンスに基づいてサーバＳに要素データのエンティティを取得しようとするが、画像形成装置１にはその参照権がないために取得を行うことはできない。

【００３８】そこで、本実施形態では、予めユーザ端末ＰＣのセキュリティマネージャＭに画像形成装置１によるユーザの代行処理権限を登録してある。画像形成装置１の画像要素取得タスクＴ４は、ジョブの発信元であるユーザ端末ＰＣのセキュリティマネージャＭに、参照に失敗した要素データの取得を依頼するための代理取得依頼通知（１）を送信する。

【００３９】セキュリティマネージャＭはこの代理取得依頼通知（図中（１）参照）を受けて、サーバＳに存在する要素データを参照する。この際、ユーザ端末ＰＣを使用しているユーザとして参照権を用いて参照動作を行う。

【００４０】ユーザ端末ＰＣにより要素データの参照を行う場合、認証サーバＣＳ（図１参照）がその参照権の検査を行う。ジョブの送信元であるユーザ端末ＰＣに対して参照権が存在する場合、目的の要素データをユーザ端末ＰＣがサーバＳから取得し（図中（２）参照）、これを画像形成装置１の画像要素取得タスクＴ４へ送信する（図中（３）参照）。

【００４１】一方、ユーザ端末ＰＣに要素データの参照権がない場合には認証サーバＣＳがユーザ端末ＰＣに対して要素データの取得が出来ない旨を通知するとともに、ユーザ端末ＰＣから画像形成装置１の画像要素取得タスクＴ４へエラーを送信する。

【００４２】このような処理によって画像形成装置１には参照権のない要素データであっても、参照権のあるユーザ端末ＰＣを介して要素データを取得することで全ての要素データを揃えて印刷処理を行うことが可能となる。

【００４３】

【発明の効果】以上説明したように、本発明の画像形成装置によれば次のような効果がある。すなわち、印字ジョブの送信元は要素データの実体を送信する必要がなく、画像形成装置側でネットワーク内に存在する要素データの実体を取得することから、ジョブの送信側にかかる負担を大幅に軽減できるようになる。また、要素データの実体を画像形成装置が取得することから、ネットワーク内に存在する要素データを揃えて処理する際の効率を向上させることが可能となる。

【図面の簡単な説明】

【図１】　第１実施形態における画像形成装置が適用されるネットワークの構成図である。

【図２】　画像形成装置のハードウェア構成を示す図である。

【図３】　画像形成装置におけるタスク構成を示す図である。

【図４】　画像データの構成例を示す模式図である。

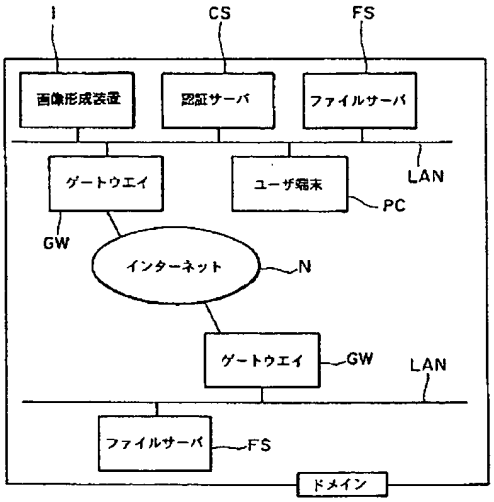
【図５】　タスク処理を説明するフローチャートである。

【図６】　第２実施形態を説明する要部構成図である。

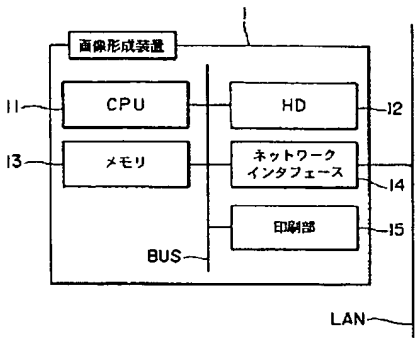
【符号の説明】

１…画像形成装置、１１…ＣＰＵ、１２…ハードディスク、１３…メモリ、１４…ネットワークインタフェース、１５…印刷部

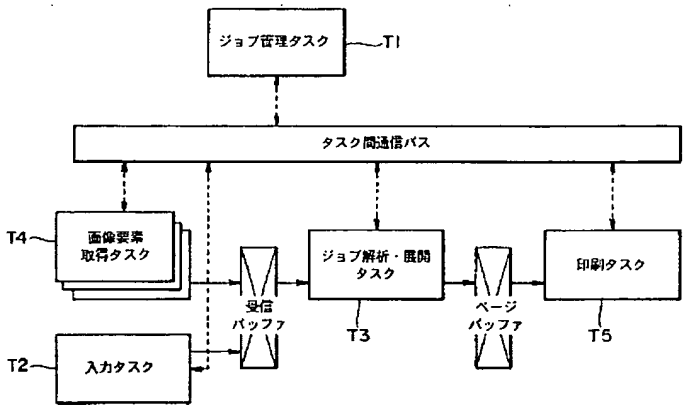
【図１】


I
CS
FS
画像形成装置
認証サーバ
ファイルサーバ
LAN
ゲートウエイ
ユーザ端末
PC
GW
インターネット
N
ゲートウエイ
GW
LAN
ファイルサーバ
FS
ドメイン

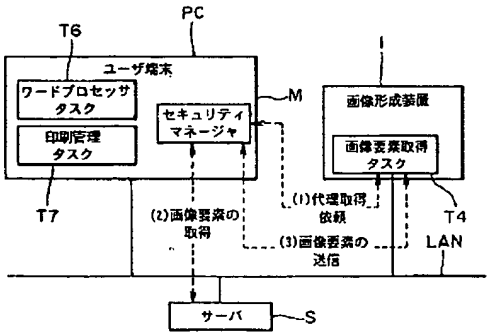
【図２】


I
画像形成装置
CPU
HD
I1
I2
メモリ
ネットワーク
インタフェース
I3
I4
印刷部
I5
BUS
LAN

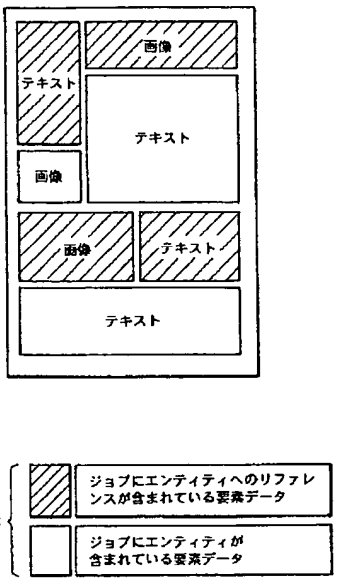
【図３】


ジョブ管理タスク
T1
タスク間通信バス
T4
画像要素
取得タスク
受信
バッファ
ジョブ解析・展開
タスク
T3
ページ
バッファ
印刷タスク
T5
T2
入力タスク

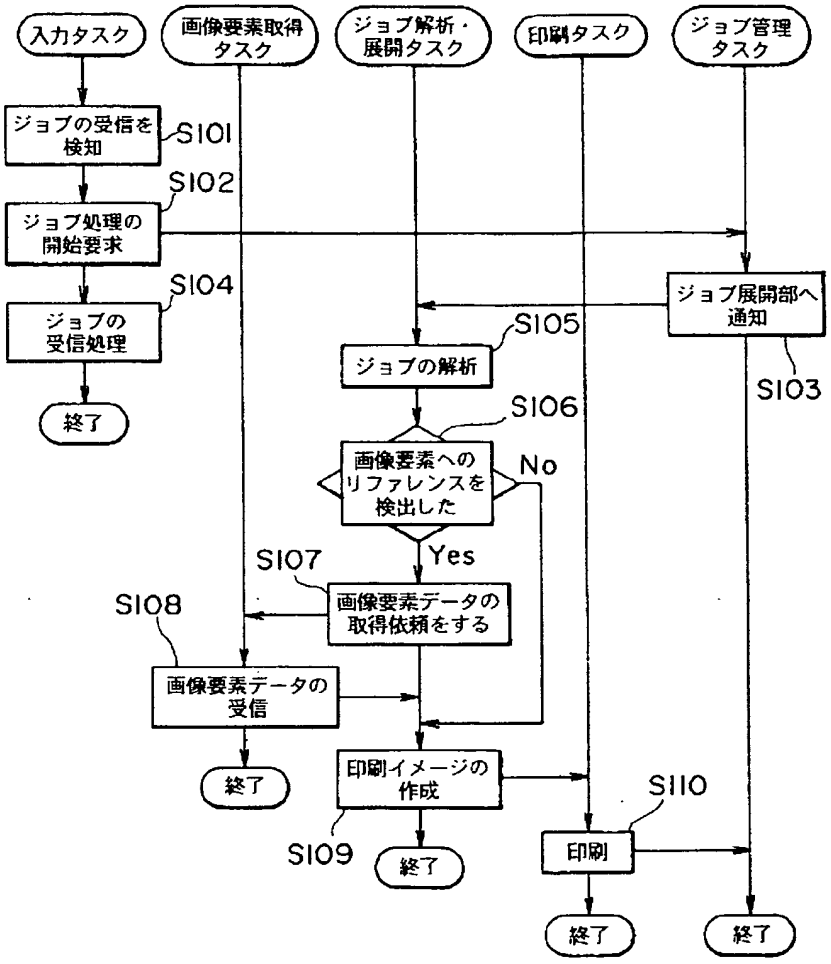
【図６】


PC
T6
ユーザ端末
ワードプロセッサ
タスク
印刷管理
タスク
M
セキュリティ
マネージャ
T7
(2)画像要素の
取得
I
画像形成装置
画像要素取得
タスク
(1)代理取得
依頼
(3)画像要素の
送信
T4
LAN
サーバ
S

【図４】


画像
テキスト
テキスト
画像
画像
テキスト
テキスト
凡例
ジョブにエンティティへのリファレンスが含まれている要素データ
ジョブにエンティティが含まれている要素データ

【図５】


入力タスク
画像要素取得タスク
ジョブ解析・展開タスク
印刷タスク
ジョブ管理タスク
ジョブの受信を検知
S101
S102
ジョブ処理の開始要求
S104
ジョブの受信処理
終了
ジョブ展開部へ通知
S103
S105
ジョブの解析
S106
画像要素へのリファレンスを検出した
No
Yes
S107
画像要素データの取得依頼をする
S108
画像要素データの受信
終了
印刷イメージの作成
S109
終了
S110
印刷
終了
終了